

User's Guide for the Tsunami Warning System in the West Coast/Alaska Tsunami Warning Center Area-of-Responsibility



NOAA/NWS/WCATWC
910 South Felton Street
Palmer, Alaska 99645
907-745-4212

wcawtc@noaa.gov
<http://wcawtc.arh.noaa.gov>

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**National Oceanic and Atmospheric Administration
National Weather Service**

Section 1: Operations Plan Objective and Scope

1.1 Plan Objective

The purpose of the Operations Plan for the West Coast/Alaska Tsunami Warning Center (WCATWC) is to provide warning recipients in the area-of-responsibility (AOR = Canadian coastal regions, the ocean coasts of all U.S. states except Hawaii, and Puerto Rico and the U.S. Virgin Islands) a document which summarizes the tsunami warning system, tsunami warning and informational messages, and message dissemination throughout the AOR. Subjects in this plan include:

- Tsunami Warning Center Operations
- Procedures
- Messages
- Dissemination routes
- Primary contacts

1.2 Plan Scope

The scope of this plan is limited to provide an overview of the tsunami warning system within the WCATWC AOR, and its procedures, products, dissemination paths, and primary message recipients. For further information on Administrative details of NOAA's tsunami warning system, please refer to the appropriate National Weather Service directives and instructions:

- Tsunami Warning Services - <http://www.nws.noaa.gov/directives/sym/pd01007curr.pdf>
- Tsunami Warning Center Operations - <http://www.nws.noaa.gov/directives/sym/pd01007001curr.pdf>

For further information on the Tsunami Warning System in the Pacific, please refer to the Communications Plan for the Tsunami Warning System in the Pacific maintained by the Pacific Tsunami Warning Center (http://ioc3.unesco.org/itic/files/TWSP_Communications_Plan_2005_rev2.pdf).

Section 2: The West Coast/Alaska Tsunami Warning Center

2.1 NOAA Tsunami Warning Center Mission

NOAA's tsunami mission is to provide reliable tsunami detection, forecasts, and warnings and to promote community resilience.

The primary operational warning system objectives for carrying out this mission are to rapidly locate, size, and otherwise characterize major earthquakes, determine their tsunamigenic potential, predict tsunami arrival times, predict coastal runup when possible, and disseminate appropriate warning and informational products based on this information.

NOAA operates two tsunami warning centers in the United States: the West Coast/Alaska Tsunami Warning Center and the Pacific Tsunami Warning Center. The West Coast/Alaska Tsunami Warning Center area-of-responsibility (AOR) consists of Canadian coastal regions, Puerto Rico and the U.S. Virgin Islands, and the ocean coasts of all U.S. States except Hawaii. The Pacific Tsunami Warning Center AOR consists of Hawaii, other U.S. interests in the Pacific Basin, countries participating in the Tsunami Warning System in the Pacific, and on an interim basis Indian Ocean and other Caribbean Sea countries.

2.2 Overview of West Coast/Alaska Tsunami Warning Center Operations

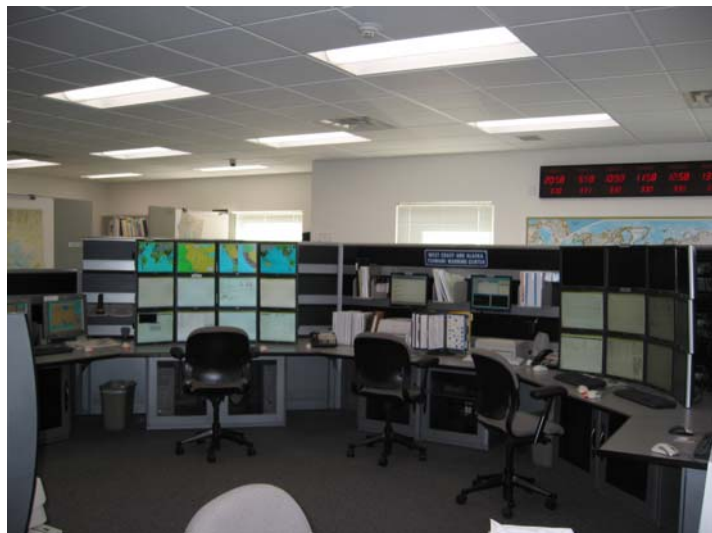
Background

The West Coast/Alaska Tsunami Warning Center (WC/ATWC) is operated by the Alaska Region of the National Weather Service and is located in Palmer, Alaska. The center collaborates with the Pacific Tsunami Warning Center to provide tsunami warning service, and mutual backup, to tsunami threatened areas throughout the United States and many other countries throughout the world.



To accomplish its mission of providing accurate and timely tsunami bulletins to its AOR, the center detects, locates, sizes, and analyzes earthquakes throughout the world. Earthquakes that activate the center's alarm system initiate an earthquake and tsunami investigation which includes the following four basic steps: automatic locating and sizing the earthquake; earthquake analysis and review; sea level data analysis to verify the existence of a tsunami and to calibrate models; and disseminating information to the appropriate emergency management officials.

In addition to its basic functions, the center conducts a community preparedness program intended to increase public awareness of the tsunami hazard and improve tsunami planning at the community level. The center also actively pursues developmental projects which enhance tsunami warning operations.



The WC/ATWC staff level has recently been increased such that the center operates 24 hours every day with two watchstanders on duty. The center began 24x7 operations on April 23, 2006. Prior to that, the center operated after normal work hours on a 5 minute stand-by response basis.

Observational Networks

Tsunami bulletins are initially issued based solely on seismic data. Approximately 225 channels of seismic data are recorded at the center. Seismic networks which provide the data are operated and funded by many

different agencies, including the United States Geological Survey (USGS), the Global Seismic Network, the National Tsunami Hazard Mitigation Program, various universities throughout the country, other national networks, and by the tsunami warning centers. Access to this data is provided through dedicated circuits, private satellite networks, and the internet.

Once a significant event has occurred, the nearest tide gages and deep ocean tsunami detectors (DART) are monitored to confirm the existence or nonexistence of a tsunami, and its degree of severity. The center has access to more than 200 tide sites and 15 DARTs throughout the Pacific and Atlantic Basins. More than half of these sites are maintained by NOAA's National Ocean Survey (NOS). In addition to the NOS sites, other agencies such as the Pacific Tsunami Warning Center, the Canadian Hydrographic Survey, and the Japanese Meteorological Agency provide sea level information to the center. The WC/ATWC also operates several gages in Alaska.

Procedures

Initial tsunami bulletins are issued as soon as the earthquake's tsunami potential has been analyzed. The first warnings are based on earthquake magnitude and location. After the initial bulletin has been issued, the center monitors recorded tsunami effects and, in coordination with PTWC, issues a cancellation, extension, or final bulletin as appropriate. Tsunami warning thresholds are given in Section 3.

Tsunami history and pre-event modeling along with observed tsunami amplitudes are taken into account for determining the extent of danger for the AOR. WC/ATWC may refrain from issuing a warning or issue the warning for only selected areas if tsunami history (and modeling if available) indicates there is no danger, or danger only to selected areas. Historical events have

shown that tsunami damage is possible if waves reach 50cm or more in amplitude. Therefore, if a tsunami is expected to reach 50cm or more, or if the tsunami potential can not be accurately judged, warnings are continued. Tsunamis can not be predicted exactly, so the 50cm cut-off is considered general guidance.

Products

Primary recipients of tsunami messages (discussed further in Section 4 with examples in Section 7) are coastal state/province departments of emergency services, the Federal Emergency Management Agency, National Weather Service offices, Canada's Atlantic Storm Prediction Center, the U.S. Coast Guard, and military bases. While these agencies are considered primary, the bulletins are available through a variety of means, discussed further in Section 5, to local emergency managers and the general public. WC/ATWC primary contacts are listed in Section 6.

Since 1980, 12 tsunami warnings have been issued by the center for events occurring within the AOR. Response time to issue warnings has ranged from 5 to 14 minutes with an average response of 9.8 minutes. These warnings all occurred prior to the center going to a 24x7 operation, and of the 12 warnings only two occurred during regular work hours. The other 10 occurred while duty personnel were not on site. Each year the WC/ATWC staff responds to hundreds of alarmed events.



Community Preparedness

The ability of any warning system to successfully save lives and reduce property damage depends upon getting the information to the public and getting them to respond to the emergency. To help attain this goal, the National Weather Service has implemented a program known as TsunamiReady which sets forth guidelines for communities to improve tsunami preparedness. This program was started in 2000 and was based on the National Weather Service StormReady program. The TsunamiReady program's purpose is to recognize communities which have taken the steps necessary to be as prepared as

possible for a tsunami. This requires the communities to follow a set of guidelines. The guidelines show that the community can receive and disseminate warnings, have a tsunami hazard plan in place, have posted evacuation routes, designated shelters, and have worked to enhance tsunami awareness throughout their community. As of June 2006, 29 communities and counties along the U.S. west coast, east coast, Alaska, and Hawaii are recognized as TsunamiReady. Center personnel actively work with local emergency officials to attain the TsunamiReady recognition.

Section 3: Procedures

Summary

WC/ATWC procedures are organized by the source's geographic region and magnitude. The basic procedures are summarized in the bar chart in Figure 1. The actions shown in Figure 1 indicate the first bulletin (and in many cases the only bulletin) to be issued. Follow up actions are described by using the Flow Charts located in the center's Operation manual. Supplemental warning or watch bulletins for events within the AOR will be issued every 30 minutes. Occasionally a follow-up message may be necessary for a Tsunami Information Statement (e.g., when a small tsunami was recorded, where the statement must be upgraded to a warning, or in the case of a large Atlantic Basin quake). This would be considered Tsunami Information Statement #2 or, if upgraded to a warning, Tsunami Warning #2.

Breakpoints

Watch and warning extent are set based on distance from epicenter or tsunami travel time, and are listed in the bulletins as extending from X to Y. Breakpoints for the Atlantic and Gulf of Mexico coasts are listed below.

Brownsville, TX	Flagler Beach, FL	US/Canada border
Baffin Bay, TX	Altamaha Sound, FL	Charlesville, NS
Port O'Connor, TX	South Santee River, SC	Chezzetcook Inlet, NS
High Island, TX	Surf City, NC	Meat Cove, NS
Morgan City, LA	Duck, NC	Cape Ray, NF
MS/AL Border	New Point Comfort, VA	La Manche, NF
Destin, FL	Cape Henlopen, DE	Boat Harbour, NF
Suwannee River, FL	Sandy Hook, NJ	Cape Chidley, NL
Bonita Beach, FL	Watch Hill, RI	
Flamingo, FL	Merrimack River, MA	
Ocean Reef, FL	Stonington, ME	

These breakpoints coincide with Weather Forecast Office (WFO) boundaries in the US. Estimated tsunami arrival times are provided in warning messages for twenty cities in the US and six cities in Canada.

Breakpoints used for the Pacific coast are listed below.

Attu, AK	Yakutat, AK	Cape Blanco, OR
Adak, AK	Sitka, AK	Oregon-California Border
Nikolski, AK	Langara Island, BC	Cape Mendocino, CA
Dutch Harbor, AK	Northern Tip Vancouver Island, BC	Point Reyes, CA
Sand Point, AK	Washington-BC Border	Point Sur, CA
Kodiak, AK	Clatsop Spit, OR	Point Conception, CA
Seward, AK	Cascade Head, OR	California-Mexico Border
Cordova, AK		

Most of these breakpoints do not coincide with WFO boundaries in the U.S. Estimated tsunami arrival times are provided in warning messages for twenty-four cities along the U.S. and Canadian coast.

In some cases, breakpoints chosen by automated procedures based on distance from epicenter or tsunami travel time will not match the real zones of danger. In these cases, watchstanders may specify the warned area by using the Specific Area warning option. For example, a large earthquake off the coast of southern California may trigger a locally damaging tsunami. However, it is very unlikely that this tsunami will pose a danger to other areas of the AOR. When using this option, the watch/warning area will be contiguous and specified using the breakpoints listed above. When a Specific Area messages is used to reduce the warned area, a warned area will not be converted to a watch area; it will be cancelled.

Area	WCATWC-Pacific				Mag	WCATWC-Atlantic							Mag
	AK, BC, WA, OR, CA	Bering Sea Deep	Arctic O., and Bering Shallow	Not in AOR		East Coast US & Canada	East Coast Inland <400 Mile	Gulf Mex Gulf St. L	Puerto Rico/ US VI ^	Not AOR Western Caribbean ^	Not AOR Eastern Caribbean ^	Not AOR Atlantic	
4					4	TIS***	4	TIS***	TIS***				4
5	TIS***	TIS***	TIS***		5	SEXX60		SEXX60	SEXX60	TIS***	TIS***		
6	SEAK71 or SEUS71	SEAK71	SEAK71		6					SEXX60	SEXX60		
6.4						TIS	TIS	TIS	TIS	TIS	TIS		
6.5	TIS	TIS		TIS		WEXX22 and WEXX32	WEXX22 and WEXX32	WEXX22 and WEXX32	WEXX22 and WEXX32	WEXX22 and WEXX32	WEXX22 and WEXX32		
6.7	WEPA43 and WEA53	WEPA43 and WEA53		WEPA43 and WEA53	6.7				Warning *			TIS	6.6
7					6.8				Puerto Rico/ US VI			WEXX22 and WEXX32	6.7
7.1	Warning * 350Km		TIS			Warning * 350Km			WEXX20 and WEXX30				7
7.5	WEPA41 and WEA51	Warning * Pribilof/ Aleutian Is.	WEPA43 and WEA53 with appropriate Evaluation		7.5	WEXX20 and WEXX30		Warning *					7.1
7.6	Warning* 1000Km	WEPA41 and WEA51		Advisory/ Watch/ Warning	7.6	Warning* 1000Km		Gulf only			Warning *		7.5
7.8	WEPA41/51			WEPA41 and WEA51	7.8	WEXX20/30		WEXX20 and WEXX30			Puerto Rico/ US VI		7.6
7.9					7.9					Warning *		TIS/Warning	7.8
10	Warning 3W/3W					Warning 3W/3W				Puerto Rico/ US VI	US VI	Spec. area	7.9
	WEPA41/ WEA51				10	WEXX20/ WEXX30				WEXX20/30	WEXX20/30	WEXX22 / 32 and WEXX20 / 30	10

*** Based on magnitude and distance from the coast.

^ if deeper than 100km, use TIS

* No Watch

No TIS for Alaska if less than magnitude 5 and West of 155W

3W/3W => warning for area impacted within 3 hours and watch for area 3 to 6 hours away

TIS = Tsunami Information Statement

WMO product IDs listed under message type

Figure 1-Procedures Chart

Section 4: Messages

4.1 Message Definitions

There are four basic types of messages issued by the WC/ATWC. These are defined below:

Tsunami Warning: **The highest level of tsunami alert.** Warnings are issued by the TWCs due to the imminent threat of a tsunami from a large undersea earthquake, or following confirmation that a potentially destructive tsunami is underway. They may initially be based only on seismic information as a means of providing the earliest possible alert. Warnings advise that appropriate actions be taken in response to the tsunami threat. Such actions could include the evacuation of low-lying coastal areas and the movement of boats and ships out of harbors to deep waters. Warnings are updated at least hourly or as conditions warrant to continue, expand, restrict, or end the Warning.

Tsunami Watch: **The second highest level of tsunami alert.** Watches are issued by the TWCs based on seismic information without confirmation that a destructive tsunami is underway. It is issued as a means of providing advance alert to areas that could be impacted by a destructive tsunami. Watches are updated at least hourly to continue them, expand their coverage, upgrade them to a Warning, or end the alert. A watch for a particular area may be included in the text of the message that disseminates a Warning for another area.

Tsunami Advisory: **The third highest level of tsunami alert.** Advisories are issued by the TWCs to coastal populations within areas not currently in either warning or watch status when a tsunami warning has been issued for another region of the same ocean. An Advisory indicates that an area is either outside the current warning and watch regions, or that the tsunami poses no danger to that area. The Center issuing the Advisory will continue to monitor the event, issuing updates at least hourly. As conditions warrant, the Advisory will either be continued, upgraded to a watch or warning, or ended.

Information Statement: A text product issued to inform that an earthquake has occurred and to advise regarding its potential to generate a tsunami. In most cases, an Information Statement indicates there is no threat of a destructive tsunami affecting the issuing TWC's AOR, and are used to prevent unnecessary evacuations as the earthquake may have been felt in coastal areas. An Information Statement may, in appropriate situations, caution about the possibility of a destructive local tsunami. A supplemental Information Statement may be issued if important additional information is received such as a sea level reading showing a tsunami signal. An Information Statement may also be upgraded to a watch or warning if appropriate. Further, the Information Statement may be used to recommend a warning when protocols agreed to by emergency management authorities within an AOR so specify.

In December 2005, the center began issuing “public” products in addition to the standard NWS format tsunami products. These were designed to include wording easier for the layman to understand. Tabulated tsunami travel times and hypocenter information were removed and replaced with information written in a more readable format. Tsunami warnings, watches, advisories, and information statements now have corresponding public products. The public products do not include NWS universal generic codes (UGC) while the standard watch/warning messages contain segmented UGCs.

The WC/ATWC also issues monthly communication tests over its primary dissemination paths. The Tsunami Warning Message product code (see section 4.2) is used on the test messages. Each month a Pacific AOR and an Atlantic AOR test are conducted. As tsunamis are uncommon events, testing is critical to ensure robust message dissemination.

4.2 Message Identifiers

The WC/ATWC tsunami bulletins are National Weather Service products. All NWS products are described by both a World Meteorological Organization (WMO) Header and a National Weather Service AWIPS ID. The following table describes the products. Examples are provided in section 7. For watch, warning, advisory, and information statements (with the WExxxx distribution), there are two products. The standard products (WEPA41, WEPA43, WEXX20, and WEXX22) are segmented within the bulletin with the watch, warning, and information only sections separated by Universal Generic Codes (for watch and warning messages). The new public products (WEAK51, WEAK53, WEXX30, and WEXX32) are in a format intended for the general public and contain action statements and information highlighting the dangers of tsunamis.

WMO Header	NWS AWIPS ID	Explanation
WEPA41 PAAQ	TSUWCA	Tsunami Warnings, Watches, and Advisories AK, BC, and US West Coast
WEPA43 PAAQ	TIBWCA	Tsunami Information Statements AK, BC, and US West Coast
WEAK51 PAAQ	TSUAK1	“Public” Tsunami Warnings, Watches, and Advisories AK, BC, and US West Coast
WEAK53 PAAQ	TIBAK1	“Public” Tsunami Information Statements AK, BC, and US West Coast
SEAK71 PAAQ	EQIAKX	Tsunami Seismic Information Statements Alaska
SEUS71 PAAQ	EQIWOC	Tsunami Seismic Information Statements BC and US West Coast
WEXX20 PAAQ	TSUAT1	Tsunami Warnings, Watches, and Advisories

		PR/VI, US East, Gulf, and Canadian Maritime Provinces
WEXX22 PAAQ	TIBAT1	Information Statements PR/VI, US East, Gulf, and Canadian Maritime Provinces
WEXX30 PAAQ	TSUATE	"Public" Tsunami Warnings, Watches, and Advisories PR/VI, US East, Gulf, and Canadian Maritime Provinces
WEXX32 PAAQ	TIBATE	"Public" Tsunami Information Statements PR/VI, US East, Gulf, and Canadian Maritime Provinces
SEXX60 PAAQ	EQIAT1	Tsunami Seismic Information Statements PR/VI, US East, Gulf, and Canadian Maritime Provinces

Products are generated by the WC/ATWC Message2 software. PTWC products can be generated at WC/ATWC in case backup is necessary. Experimental web-based products are created and issued by the WC/ATWC to its web site. The web-based products are written in an html format with embedded links to related information and are similar in format to the public products.

Section 5: Message Dissemination Routes

5.1 Overview of Product Dissemination Paths

Summary of Message Dissemination Methods at the West Coast/Alaska Tsunami Warning Center

Service	Owner or Operating Agency	Primary user audience
* AFTN	FAA	FAA Regional Operations Centers, Flight Service Stations and Alaska WSO's
* NMCLine	NWS	NWS Offices via AWIPS, NWS Telecommunications Gateway to EMWIN, Family of Services, Global telecommunications system, ...
* NOAA Weather Wire	NWS	National Weather Service forecast subscribers and U.S./Canada emergency management agencies
NAWAS	FEMA	Emergency management agencies nationwide.
AKWAS	Alaska DHS&EM/FEMA	Emergency management offices in State of Alaska
VHF radio	Alaska DHS&EM	Alaska DHS&EM, AK State Troopers, Palmer Police
Satellite Phone Backup	WC/ATWC & PTWC	Tsunami Warning Centers (emergency backup communications)
*QDDS	USGS	Internet based earthquake information dissemination tool.
*INTERNET (web site, email, RSS, and cell phone text messaging)	Public	International and domestic government agencies, academic institutions and the public in general
Telephone	Public	A Primary and Secondary phone list is maintained

An asterisk (*) in the previous table indicates messages are transmitted on these systems simultaneously from the Operations console at the center. Figure 2 shows main communications paths and recipients.

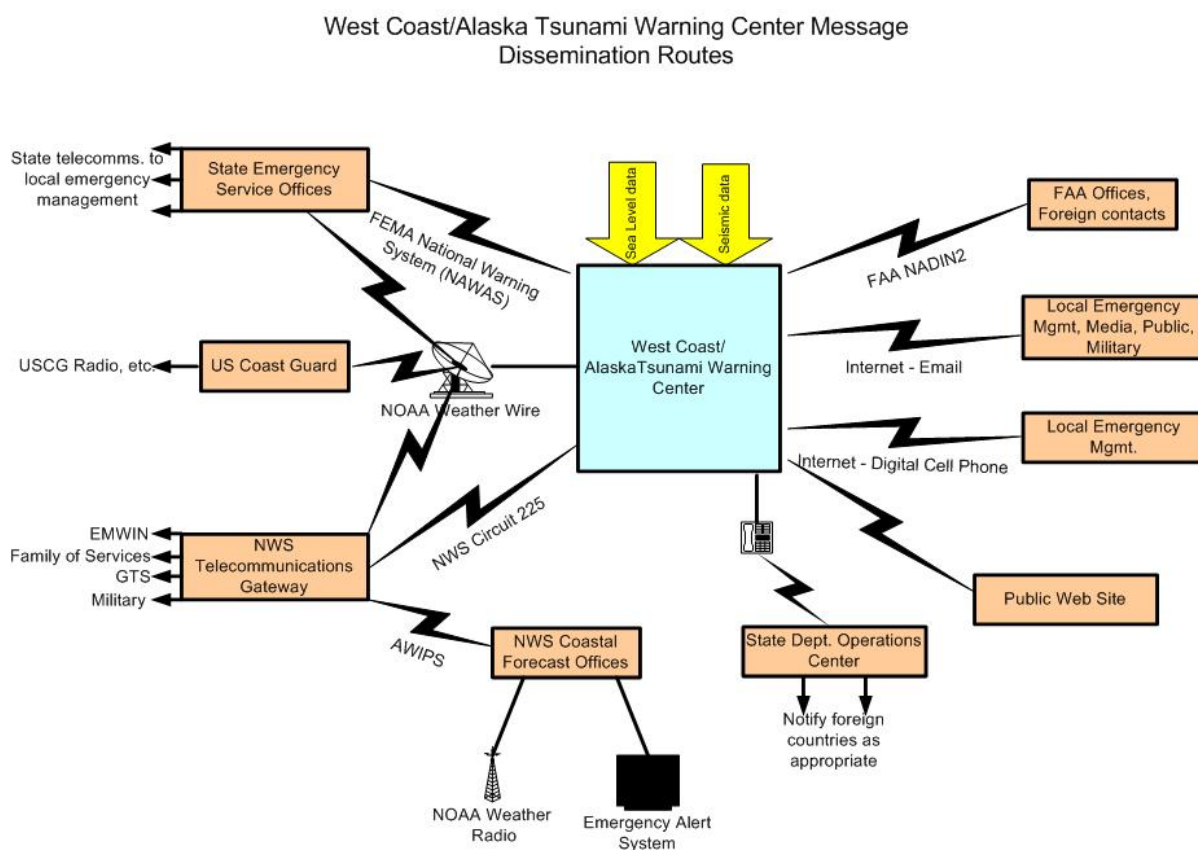


Figure 2 - Tsunami Warning Center message communications

4/05 PW

AFTN - The **A**eronautical **F**ixed **T**elecommunications **N**etwork is a world-wide communications system for the exchange of messages and/or digital data between stations primarily for the safety of air navigation and other air services. Since most flight service facilities must be cognizant of current aviation weather forecasts, many weather forecast offices are provided with AFTN terminals. Messages over this media must be specifically addressed to recipients. Collective addresses are used to transmit to the Alaska Weather Service Offices, Weather Forecast Offices, Flight Service Stations, and FAA regional Operation Centers nationwide.

NMC Line – This is the circuit between the NWS Telecommunication Gateway in Silver Spring MD and the Alaska Regional Headquarters (ARH) in Anchorage AK. The WC/ATWC transmits and receives messages to and from this line via a socket connection to a server at the ARH. Transmitting on this connection to ARH provides tsunami products to AWIPs and a secondary route into the NOAA Weather Wire system at the Anchorage WFO. This routing also provides tsunami messages to the NWS

telecommunications gateway, and from there to a multitude of NWS communication services such as EMWIN, Family of Services, and the Global telecommunications system.

NOAA Weather Wire - The NOAA Weather Wire is a satellite broadcast service maintained by the NWS to disseminate weather products domestically. Both the West Coast/Alaska Tsunami Warning Center and PTWC have uplink and downlink capability on the NWW system. Users of the NWW system consist of Weather Service Offices, state and provincial emergency management agencies, and the U.S. Coast Guard. Receiver sites can program their selector box to receive any number of selected NWS products (or messages).

NAWAS - The **NA**ational **WA**rning **S**ystem is a nationwide dedicated voice telephone system connecting selected defense, National Weather Service, emergency management, and Coast Guard agencies. The circuit is supported by the Federal Emergency Management Agency (FEMA). Control over transmissions on the circuit is maintained by the FEMA Operations Center or the FEMA Alternate Operations Center.

AKWAS - The **A**laska **WA**rning **S**ystem is a statewide dedicated voice telephone system connecting Alaska Division of Homeland Security and Emergency Management (DHS&EM), National Guard, Law Enforcement and Weather Service Offices. The circuit is supported by the FEMA and the Alaska DHS&EM. Control over transmissions on the circuit is maintained by the State Warning Point at Fort Richardson, Alaska.

VHF Radio – Broadcasting on 155.295 (Emergency Area Command Frequency) and 155.250 MHZ this system provides emergency voice communications to the Alaska DHS&EM, Alaska State Troopers, and Palmer Police. Warning messages are only transmitted by this means in absence of primary communications.

Satellite Phone – This phone system is for emergency communications between the two tsunami warning centers and other primary message recipients. It is intended for use when other normal communications systems have failed.

QDDS – An earthquake information dissemination tool operated by the United States Geological Survey. The internet is used to transmit earthquake information to USGS servers where it is disseminated to various web sites and agencies.

Internet –Group email lists (emergency managers) are maintained. Shortened cell phone pager messages are also transmitted via internet to emergency managers. A public web site is maintained at <http://wcatwc.arh.noaa.gov/> where current event messages and maps are posted. The web site also provides a large amount of educational, safety, and scientific information. A public email and cell phone text messaging service is also available through the WC/ATWC web site, as well as RSS feeds and CAP/XML products.

Telephone – Primary and Secondary telephone lists are maintained. A short call down list is notified after events.

5.2 Overview of Product Retrieval Methods

WC/ATWC products are issued and can be retrieved by several different methods. Many communities have developed local methods for disseminating the message; such as, sirens, automatic phone calls, local CB radio, AHAB Radio, etc. Contact your local emergency management for dissemination methods within your community.

National Weather Service Systems

- NOAA Weather Wire Service
- NOAA Weather Radio (NWR)
- EMWIN®
- National Weather Service Forecast Offices
- Email/cell phone text messaging
- WCATWC Web Page
- RSS feed

State and Provincial Dissemination Systems

Federal Communications Commission

- Emergency Alert System

United States Coast Guard

- US Coast Guard Radio

Section 6: Primary Contact List

State	Agency	Primary Comms Method	Street	City	St	Zip
AK						
	USAF - Elmendorf Command Center	Email - phone	Q Street	Elmendorf AFB	AK	99506-2830
	SWP - Alaska	NWW - NAWAS	P. O. Box 5750	Ft Richardson	AK	99505
	WFO - Anchorage AK	AWIPS	6930 Sand Lake Road	Anchorage	AK	99502-1845
	Alaska State Troopers Headquarters - Fairbanks	AKWAS	1979 Peger Road	Fairbanks	AK	99709
	NWS - Alaska Regional HQ	Phone	222 W. 7th Ave., RM 517	Anchorage	AK	99513-7575
	NWS - Alaska Regional HQ	Phone	222 W. 7th Ave., RM 517	Anchorage	AK	99513-7575
	WFO - Juneau AK	AWIPS	8500 Mendenhall Loop Rd	Juneau	AK	99801
	NWS - Alaska Regional HQ	Phone	222 W. 7th Ave., RM 517	Anchorage	AK	99513-7575
	USCG - 17th District Juneau AK - CC	NWW - NAWAS	P.O. Box 25517	Juneau	AK	99801-5517
AL						
	WFO - Mobile AL	AWIPS	8400 Airport Blvd., Bldg 11	Mobile	AL	36608
	SWP - Alabama	NWW - NAWAS	P. O Box 2160	Clanton	AL	35046-2160
BC						
	MARPAC - Maritime Forces Pacific Operations Centre	NAWAS	Building 77, Box 17000 Stn Forces	Victoria	BC	V9A 7N2
	PEP - Emergency Coordination Center	NWW - NAWAS	455 Boleskine Rd.	Victoria	BC	V8W 9J1

State	Agency	Primary Comms Method	Street	City	St	Zip
CA						
	WFO - Monterey CA	AWIPS	21 Grace Hopper Ave	Monterey	CA	93943-5505
	FNMOCC – Fleet Numeric – Navy/DMS interface, Monterey	NOAAPORT	7 Grace Hopper Ave.	Monterey	CA	93943-0027
	USCG -11th District Alameda CA - CC	NWW - NAWAS	Coast Guard Island	Alameda	CA	94501-5100
	FEMA - Region IX	NAWAS	1111 Broadway, Suite 1200	Oakland	CA	94607
	SWP - California	NWW - NAWAS	3650 Schriver Ave.	Mather	CA	65655
	USCG - CAMSPAC Pt Reyes CA	NWW	17000 Sir Francis Drake Blvd	Pt Reyes Station	CA	94956-0560
	WFO - Oxnard CA	AWIPS	520 North Elevar Street	Oxnard	CA	93030
	WFO - Eureka CA	AWIPS	300 Startare Dr.	Eureka	CA	95501
CO						
	National Earthquake Information Center - USGS	Phone	1711 Illinois Street	Golden	CO	80401
CT						
	SWP - Connecticut	NWW - NAWAS	25 Sigourney Street	Hartford	CT	06106-5042
DC						
	State Department - Emergency Operations Center	NAWAS-Email	2201 C Street NW	Washington	DC	20520
	SWP - District of Columbia	NWW - NAWAS	2000 14 th Street NW, 8 th Floor	Washington	DC	20009

State	Agency	Primary Comms Method	Street	City	St	Zip
DE						
	SWP - Delaware	NWW - NAWAS	165 Brick Store Landing Rd.	Smyrna	DE	19977
FL						
	WFO - Melbourne FL	AWIPS	421 Croton Rd	Melbourne	FL	32935
	WFO - Key West FL	AWIPS	1315 White Street	Key West	FL	33040
	WFO - Jacksonville FL	AWIPS	13701 Fang Drive	Jacksonville	FL	32218
	WFO - Tallahassee FL	AWIPS	Love Bldg, Florida State University	Tallahassee	FL	32306-4509
	USCG - 7th District Miami FL - CC	NWW - NAWAS	909 SE 1 st	Miami	FL	33131
	SWP - Florida	NWW - NAWAS	2555 Shumard Oak Blvd	Tallahassee	FL	32399-2100
	WFO - Miami FL	AWIPS	11691 SW 17 th Street	Miami	FL	33165
GA						
	SWP - Georgia	NWW - NAWAS	P. O. Box 18055	Atlanta	GA	30316
	FEMA Alternate Ops Center - Thomasville GA	NAWAS	404 S. Pine Tree Blvd	Thomasville	GA	31792
HI						
	Pacific Tsunami Warning Center	All systems	91-270 Fort Weaver Rd	Ewa Beach	HI	96706-2928
LA						
	SWP – Louisiana	NWW – NAWAS	7667 Independence Blvd	Baton Rouge	LA	70806
	WFO - New Orleans LA	AWIPS	62300 Airport Road	Slidell	LA	70460-5243
	WFO - Lake Charles LA	AWIPS	500 Airport Road	Lake Charles	LA	70607
	USCG - 8th District New Orleans LA - CC	NWW - NAWAS	500 Poydras Street	New Orleans	LA	70130-3310

State	Agency	Primary Comms Method	Street	City	St	Zip
MA						
	SWP - Massachusetts	NWW - NAWAS	400 Worcester	Framingham	MA	01702
	WFO - Taunton MA	AWIPS	445 Myles Standish	Taunton	MA	02780
MD						
	SWP - Maryland	NWW - NAWAS	5401 Rue Saint Lo Drive	Reisterstown	MD	21136
	NGA – National Geospatial-Intelligence Agency	Email	4600 Sangamore Road	Bethesda	MD	20816
	CORMS - National Ocean Survey	Phone	1325 E. West Hwy, RM 6390	Silver Spring	MD	20910
	NWS – HQ – Metwatch Desk	Email	1325 East West Highway	Silver Spring	MD	20910
ME						
	WFO - Gray ME	AWIPS	1 Weather Lane, Route 231	Gray	ME	04039
	WFO - Caribou ME	AWIPS	810 Main Street	Caribou	ME	04736
	SWP - Maine	NWW - NAWAS	72 State House Station	Augusta	ME	04333-0072
MS						
	SWP - Mississippi	NWW - NAWAS	P. O. Box 4501	Jackson	MS	39296-4501
	DART Buoys - Data Management Analysis Center - NDBC	Email - Phone	Bldg 3201	Bay St Louis	MS	39522
NC						
	SWP - North Carolina	NWW - NAWAS	4008 District Drive	Raleigh	NC	27607
	WFO - Wilmington NC	AWIPS	2015 Gardner Drive	Wilmington	NC	28405
NH						
	SWP - New Hampshire	NWW - NAWAS	33 Hazen Drive	Concord	NH	03305

State	Agency	Primary Comms Method	Street	City	St	Zip
NJ						
	WFO - Mount Holly NJ	AWIPS	732 Woodlane Road	Mount Holly	NJ	08060-9615
	SWP - New Jersey	NWW - NAWAS	P. O. Box 7068	Trenton	NJ	08628
NS						
	Atlantic Storm Prediction Centre - Nova Scotia	GTS - Email	45 Alderney Drive	Dartmouth	NS	B2Y 2N6
NY						
	WFO - Albany NY	AWIPS	251 Fuller Rd, Suite B300	Albany	NY	12203-3640
	SWP - New York	NWW - NAWAS	1220 Washington Ave, Suite 101, Bldg 22	Albany	NY	12226-2251
ON						
	Govt of Canada - Ops Ctr Public Safety & Em Prep Canada	NAWAS	122 Banks St.	Ottawa	ON	K1A0W6
OR						
	WFO - Portland OR	AWIPS	5241 NE 122 nd Ave.	Portland	OR	97230-1089
	SWP - Oregon	NWW - NAWAS	3225 State St.	Salem	OR	97309
PA						
	SWP - Pennsylvania	NWW - NAWAS	2605 Interstate Drive	Harrisburg	PA	17110-9364
	WFO - Pittsburg PA	AWIPS	192 Shafer Road	Moon Township	PA	15108

State	Agency	Primary Comms Method	Street	City	St	Zip
PR						
	Puerto Rico Seismic Network	Email-Phone	PO Box 9017	Mayaguez	PR	00681
	SWP – Puerto Rico	NWW - EMWIN	PO Box 566597	San Juan	PR	00906
RI						
	SWP - Rhode Island	NWW - NAWAS	645 New London Ave	Cranston	RI	02920
SC						
	SWP - South Carolina	NWW - NAWAS	279 fish Hatchery Rd	West Columbia	SC	29172
	WFO - Charleston SC	AWIPS	5777 S. Aviation Ave	Charleston	SC	29406-6162
TX						
	WFO - Houston TX	AWIPS	1353 FM 646, Suite 202	Dickinson	TX	77539
	WFO - Corpus Cristi TX	AWIPS	300 Pinson Dr	Corpus Cristi	TX	78406-1803
	WFO - Brownsville TX	AWIPS	20 Vermillion Rd	Brownsville	TX	78521-5798
	SWP - Texas	NWW - NAWAS	5805 N. Lamar Blvd	Austin	TX	78752
VA						
	USN - NAVLANTMETOC - Norfolk VA	AWIPS - Phone	9141 3rd Ave.	Norfolk	VA	23511
	WFO - Wakefield VA	AWIPS	10009 General Mahone	Wakefield	VA	23888
	FEMA Operation Center - Berryville VA	NAWAS	19844 Blue Ridge Mountain Rd	Berryville	VA	22611
	USCG - CAMSLANT - Chesapeake VA	NWW	4720 Douglas Munro Rd	Chesapeake	VA	23322-2598
	SWP - Virginia	NWW - NAWAS	10501 Trade Court	Richmond	VA	23236
VI						
	SWP U.S. Virgin Islands	NWW - EMWIN	2-C Contant, A-Q Bldg.	St. Thomas	VI	00820

State	Agency	Primary Comms Method	Street	City	St	Zip
WA						
	SWP - Washington	NWW - NAWAS	Military Dept. Emergency Management Div.	Camp Murray, Tacoma	WA	98430-1522
	USCG - 13th District Seattle WA – CC	NWW - NAWAS	915 2nd Avenue	Seattle	WA	98174-1067
	FEMA MERS Ops Center -Region 10 - Bothell WA	NAWAS	200 228th St. SW	Bothell	WA	98021-8665
	WFO - Seattle WA	AWIPS	7600 Sand Point Way NE	Seattle	WA	98115

Section 7: Message Examples

7.1 Pacific AOR Tsunami Warning/Watch/Advisory (WEPA41)

WEPA41 PAAQ 281819
TSUWCA

BULLETIN
TSUNAMI MESSAGE NUMBER 1
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
1019 AM PST TUE NOV 28 2006

...THIS MESSAGE IS FOR TEST PURPOSES TO SHOW AN EXAMPLE
WEPA41 MESSAGE...

...A TEST TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE OREGON
- WASHINGTON AND BRITISH COLUMBIA COASTAL AREAS FROM
CLATSOP SPIT OREGON TO LANGARA I. BRITISH COLUMBIA...

...AT THIS TIME THIS MESSAGE IS ADVISORY ONLY FOR OTHER
AREAS OF CALIFORNIA - OREGON - AND ALASKA...

EVALUATION

IT IS NOT KNOWN - REPEAT NOT KNOWN - IF A TSUNAMI EXISTS BUT A
TSUNAMI MAY HAVE BEEN GENERATED. THEREFORE PERSONS IN LOW-
LYING COASTAL AREAS SHOULD BE ALERT TO INSTRUCTIONS FROM THEIR
LOCAL EMERGENCY OFFICIALS. PERSONS ON THE BEACH SHOULD MOVE TO
HIGHER GROUND IF IN A WARNED AREA. TSUNAMIS ARE A SERIES OF
WAVES WHICH COULD BE DANGEROUS FOR SEVERAL HOURS AFTER THE
INITIAL WAVE ARRIVAL.

PRELIMINARY EARTHQUAKE PARAMETERS

MAGNITUDE - 7.3
TIME - 0910 AKST NOV 28 2006
1010 PST NOV 28 2006
1810 UTC NOV 28 2006
LOCATION - 49.8 NORTH 126.5 WEST
40 MILES SE OF PORT ALICE BRITISH COLUMBIA
245 MILES NW OF SEATTLE WASHINGTON
DEPTH - 12 MILES

PZZ130-131-133-134-132-135-150-153-156-110-250-210-WAZ001-
503-506-507-007-508-509-510-511-514-515-516-517-021-281919-
COASTAL AREAS BETWEEN AND INCLUDING CLATSOP SPIT OREGON TO
LANGARA I. BRITISH COLUMBIA

...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE OREGON
- WASHINGTON AND BRITISH COLUMBIA COASTAL AREAS FROM
CLATSOP SPIT OREGON TO LANGARA I. BRITISH COLUMBIA...

ESTIMATED TIMES OF INITIAL WAVE ARRIVAL

TOFINO-BC	1107	PST NOV 28	LANGARA-BC	1204	PST NOV 28
NEAH BAY-WA	1124	PST NOV 28	ASTORIA-OR	1208	PST NOV 28

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PKZ176-175-172-170-171-155-150-132-136-138-137-130-141-140-
120-121-129-127-125-126-128-052-051-053-022-012-043-013-
011-021-032-031-042-034-033-035-041-036-PZZ255-350-353-356-
450-455-550-530-535-555-670-673-650-655-750-AKZ191-185-181-
171-145-111-101-121-125-131-135-017-020-018-019-021-022-
023-024-025-026-028-029-027-ORZ001-002-021-022-CAZ001-002-
505-508-006-509-514-515-034-035-039-044-040-045-046-041-
087-042-043-281919-

COASTAL AREAS FROM THE CALIFORNIA-MEXICO BORDER TO CLATSOP
SPIT OREGON AND FROM LANGARA I. BRITISH COLUMBIA TO ATTU
ALASKA

...TSUNAMI ADVISORY STATEMENT...

NO - REPEAT NO - WATCH OR WARNING IS IN EFFECT FOR THE
COASTAL AREAS FROM THE CALIFORNIA-MEXICO BORDER TO CLATSOP
SPIT OREGON AND FROM LANGARA I. BRITISH COLUMBIA TO ATTU
ALASKA

FOR INFORMATION ONLY - ESTIMATED TIMES OF INITIAL WAVE ARRIVAL

SEASIDE-OR	1145	PST NOV 28	SEWARD-AK	1316	AKST NOV 28
CHARLESTON-OR	1159	PST NOV 28	LA JOLLA-CA	1420	PST NOV 28
CRESCENT CITY-CA	1219	PST NOV 28	VALDEZ-AK	1333	AKST NOV 28
SITKA-AK	1151	AKST NOV 28	CORDOVA-AK	1343	AKST NOV 28
KETCHIKAN-AK	1217	AKST NOV 28	SAND PT.-AK	1357	AKST NOV 28
SAN FRANCISCO-CA	1330	PST NOV 28	DUTCH HARBOR-AK	1416	AKST NOV 28
YAKUTAT-AK	1247	AKST NOV 28	HOMER-AK	1425	AKST NOV 28
JUNEAU-AK	1256	AKST NOV 28	COLD BAY-AK	1434	AKST NOV 28
SAN PEDRO-CA	1406	PST NOV 28	ADAK-AK	1441	AKST NOV 28
KODIAK-AK	1315	AKST NOV 28	SHEMYA-AK	1522	AKST NOV 28

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TSUNAMI WARNINGS ARE ISSUED DUE TO THE IMMINENT THREAT OF A TSUNAMI.
WARNINGS CAN BE BASED SOLELY ON SEISMIC INFORMATION... OR BASED
ON CONFIRMATION THAT A POTENTIALLY DESTRUCTIVE WAVE HAS OCCURRED.
COASTAL RESIDENTS IN THE WARNING AREA WHO ARE NEAR THE BEACH OR
IN LOW-LYING REGIONS SHOULD MOVE IMMEDIATELY INLAND TO HIGHER
GROUND.

THE PACIFIC TSUNAMI WARNING CENTER IN EWA BEACH HAWAII WILL
ISSUE MESSAGES FOR HAWAII AND OTHER AREAS OF THE PACIFIC
OUTSIDE THE STATES AND PROVINCES LISTED ABOVE.

MESSAGES WILL BE ISSUED EVERY HALF HOUR OR SOONER IF CONDITIONS
WARRANT. THIS TSUNAMI WARNING WILL REMAIN IN EFFECT
UNTIL FURTHER NOTICE. REFER TO THE INTERNET SITE
WCATWC.ARH.NOAA.GOV FOR MORE INFORMATION AND EXPECTED ARRIVAL
TIMES.

THIS IS A TEST MESSAGE. DO NOT TAKE ACTION BASED ON THIS TEST
MESSAGE.

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7.2 Pacific AOR Tsunami Information Statement (WEPA43)

WEPA43 PAAQ 281823
TIBWCA

TSUNAMI INFORMATION STATEMENT NUMBER 1
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
1023 AM PST TUE NOV 28 2006

...THIS MESSAGE IS FOR TEST PURPOSES TO SHOW AN EXAMPLE
WEPA43 MESSAGE...

...THIS TSUNAMI INFORMATION STATEMENT IS FOR ALASKA/ BRITISH
COLUMBIA/ WASHINGTON/ OREGON AND CALIFORNIA ONLY...

NO - REPEAT NO - WATCH OR WARNING IS IN EFFECT FOR THE STATES
AND PROVINCES LISTED ABOVE.

EVALUATION

BASED ON MAGNITUDE AND HISTORIC TSUNAMI RECORDS THE EARTHQUAKE
WAS NOT SUFFICIENT TO GENERATE A TSUNAMI DAMAGING TO CALIFORNIA/
OREGON/ WASHINGTON/ BRITISH COLUMBIA OR ALASKA. IN COASTAL AREAS
OF INTENSE SHAKING LOCALLY GENERATED TSUNAMIS CAN BE TRIGGERED BY
UNDERWATER LANDSLIDES.

PRELIMINARY EARTHQUAKE PARAMETERS

MAGNITUDE - 6.8
TIME - 0910 AKST NOV 28 2006
1010 PST NOV 28 2006
1810 UTC NOV 28 2006
LOCATION - 16.4 NORTH 102.5 WEST
- OFF COAST OF GUERRERO MEXICO
DEPTH - 19 MILES

THE PACIFIC TSUNAMI WARNING CENTER IN EWA BEACH HAWAII WILL ISSUE
MESSAGES FOR HAWAII AND OTHER AREAS OF THE PACIFIC.

THIS WILL BE THE ONLY STATEMENT ISSUED FOR THIS EVENT BY THE
WEST COAST/ALASKA TSUNAMI WARNING CENTER UNLESS ADDITIONAL
INFORMATION BECOMES AVAILABLE. REFER TO THE INTERNET SITE
WCATWC.ARH.NOAA.GOV FOR MORE INFORMATION.

THIS IS A TEST MESSAGE. DO NOT TAKE ACTION BASED ON THIS TEST
MESSAGE.
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7.3 Alaska Information Statement (SEAK71)

SEAK71 PAAQ 281844
EQIAKX

TSUNAMI SEISMIC INFORMATION STATEMENT
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
944 AM AKST TUE NOV 28 2006

...THIS MESSAGE IS FOR TEST PURPOSES TO SHOW AN EXAMPLE
SEAK71 MESSAGE...

...THIS IS AN INFORMATION STATEMENT...

EVALUATION

AN EARTHQUAKE HAS OCCURRED WITH A LOCATION AND MAGNITUDE SUCH
THAT A TSUNAMI WILL NOT BE GENERATED. THIS WILL BE THE ONLY
WCATWC MESSAGE ISSUED FOR THIS EVENT.

PRELIMINARY EARTHQUAKE PARAMETERS

MAGNITUDE - 5.2
TIME - 0930 AKST NOV 28 2006
1030 PST NOV 28 2006
1830 UTC NOV 28 2006
LOCATION - 61.1 NORTH 143.3 WEST
25 MILES SW OF MCCARTHY ALASKA
220 MILES E OF ANCHORAGE ALASKA
DEPTH - 25 MILES

THE LOCATION AND MAGNITUDE ARE BASED ON PRELIMINARY INFORMATION.
FURTHER INFORMATION WILL BE ISSUED BY THE UNITED STATES
GEOLOGICAL SURVEY - EARTHQUAKE.USGS.GOV.

THIS IS A TEST MESSAGE. DO NOT TAKE ACTION BASED ON THIS TEST
MESSAGE.
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7.4 U.S. West Coast Information Statement (SEUS71)

SEUS71 PAAQ 281842
EQIWOC

TSUNAMI SEISMIC INFORMATION STATEMENT
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
1042 AM PST TUE NOV 28 2006

...THIS MESSAGE IS FOR TEST PURPOSES TO SHOW AN EXAMPLE
SEUS71 MESSAGE...

...THIS IS AN INFORMATION STATEMENT...

EVALUATION

AN EARTHQUAKE HAS OCCURRED WITH A LOCATION AND MAGNITUDE SUCH
THAT A TSUNAMI WILL NOT BE GENERATED. THIS WILL BE THE ONLY
WCATWC MESSAGE ISSUED FOR THIS EVENT.

PRELIMINARY EARTHQUAKE PARAMETERS

MAGNITUDE - 5.3
TIME - 0930 AKST NOV 28 2006
1030 PST NOV 28 2006
1830 UTC NOV 28 2006
LOCATION - 35.2 NORTH 119.6 WEST
35 MILES SW OF BAKERSFIELD CALIFORNIA
110 MILES NW OF LOS ANGELES CALIFORNIA
DEPTH - 12 MILES

THE LOCATION AND MAGNITUDE ARE BASED ON PRELIMINARY INFORMATION.
FURTHER INFORMATION WILL BE ISSUED BY THE UNITED STATES
GEOLOGICAL SURVEY - EARTHQUAKE.USGS.GOV.

THIS IS A TEST MESSAGE. DO NOT TAKE ACTION BASED ON THIS TEST
MESSAGE.
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7.5 Atlantic AOR Tsunami Warning/Watch (WEXX20)

WEXX20 PAAQ 281826
TSUAT1

BULLETIN

TSUNAMI MESSAGE NUMBER 1
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
126 PM EST TUE NOV 28 2006

...THIS MESSAGE IS FOR TEST PURPOSES TO SHOW AN EXAMPLE
WEXX20 MESSAGE...

...A TEST TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE RHODE
ISLAND - MASSACHUSETTS - NEW HAMPSHIRE - MAINE - NEW
BRUNSWICK AND NOVA SCOTIA COASTAL AREAS FROM WATCH HILL
RHODE ISLAND TO CHEZZETCOOK NOVA SCOTIA...

...A TEST TSUNAMI WATCH IS IN EFFECT FOR THE FLORIDA - GEORGIA -
SOUTH CAROLINA - NORTH CAROLINA - VIRGINIA - MARYLAND -
DELAWARE - NEW JERSEY - NEW YORK - CONNECTICUT AND RHODE
ISLAND COASTAL AREAS FROM FLAMINGO FLORIDA TO WATCH HILL
RHODE ISLAND AND FOR THE NOVA SCOTIA AND NEWFOUNDLAND
COASTAL AREAS FROM CHEZZETCOOK NOVA SCOTIA TO BOAT HARBOUR
NEWFOUNDLAND...

...AT THIS TIME THIS MESSAGE IS ADVISORY ONLY FOR PUERTO RICO
AND THE U.S. VITGIN ISLANDS AS WELL AS U.S. AND
CANADIAN ATLANTIC AND GULF OF MEXICO COASTAL REGIONS NOT
INCLUDED IN THE WATCH AND WARNING AREAS...

EVALUATION

IT IS NOT KNOWN - REPEAT NOT KNOWN - IF A TSUNAMI EXISTS BUT A
TSUNAMI MAY HAVE BEEN GENERATED. THEREFORE PERSONS IN LOW-
LYING COASTAL AREAS SHOULD BE ALERT TO INSTRUCTIONS FROM THEIR
LOCAL EMERGENCY OFFICIALS. PERSONS ON THE BEACH SHOULD MOVE TO
HIGHER GROUND IF IN A WARNED AREA. TSUNAMIS ARE A SERIES
OF WAVES WHICH COULD BE DANGEROUS FOR SEVERAL HOURS AFTER THE
INITIAL WAVE ARRIVAL.

PRELIMINARY EARTHQUAKE PARAMETERS

MAGNITUDE - 7.9
TIME - 1320 EST NOV 28 2006
1220 CST NOV 28 2006
1820 UTC NOV 28 2006
LOCATION - 41.9 NORTH 69.3 WEST
60 MILES NE OF NANTUCKET MASSACHUSETTS
95 MILES SE OF BOSTON MASSACHUSETTS
DEPTH - 14 MILES

ANZ230>237-250-254-255-150-050-081-RIZ002-005>007-MAZ019>024-
016-007-NHZ014-MEZ022>028-029-030-281926-
COASTAL AREAS BETWEEN AND INCLUDING WATCH HILL RHODE ISLAND
TO CHEZZETCOOK NOVA SCOTIA.

...A TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE RHODE
ISLAND - MASSACHUSETTS - NEW HAMPSHIRE - MAINE - NEW
BRUNSWICK AND NOVA SCOTIA COASTAL AREAS FROM WATCH HILL
RHODE ISLAND TO CHEZZETCOOK NOVA SCOTIA...

ESTIMATED TIMES OF INITIAL WAVE ARRIVAL		
PORTLAND-ME	1448 EST NOV 28	1653 AST NOV 28
NANTUCKET ISLE-MA	1522 EST NOV 28	1706 AST NOV 28
BOSTON-MA	1525 EST NOV 28	

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GMZ032-075-052>054-AMZ630-650-651-550-555-450-452-454-330-350-
352-354-250-252-254-256-130-135-150-152-154-156-158-ANZ630>633-
650-652-654-656-658-530>534-537-430-431-450>455-330-335-338-
350-353-355-081-FLZ073-074-072-068-076-064-059-054-047-147-141-
024-025-033-038-GAZ154-166-141-139-117-119-SCZ051-048>050-046-
034-NCZ100-101-097-098-095-104-103-094-080-081-045>047-030>032-
015>017-102-VAZ082-089>091-093>096-098>100-084>086-074>078-MDZ021>
025-014-018-017-011-007-012-015-019-008-DEZALL-NJZ005-006-011>
014-023>026-021-NYZ071>081-CTZ009>012-281926-
COASTAL AREAS FROM FLAMINGO FLORIDA TO WATCH HILL RHODE
ISLAND AND FROM CHEZZETCOOK NOVA SCOTIA TO BOAT HARBOUR
NEWFOUNDLAND.

...A TSUNAMI WATCH IS IN EFFECT FOR THE FLORIDA - GEORGIA -
SOUTH CAROLINA - NORTH CAROLINA - VIRGINIA - MARYLAND -
DELAWARE - NEW JERSEY - NEW YORK - CONNECTICUT AND RHODE
ISLAND COASTAL AREAS FROM FLAMINGO FLORIDA TO WATCH HILL
RHODE ISLAND AND FOR THE NOVA SCOTIA AND NEWFOUNDLAND
COASTAL AREAS FROM CHEZZETCOOK NOVA SCOTIA TO BOAT HARBOUR
NEWFOUNDLAND...

ESTIMATED TIMES OF INITIAL WAVE ARRIVAL

MONTAUK-NY	1657 EST NOV 28	MIAMI-FL	1832 EST NOV 28
CAPE HATTERAS-NC	1658 EST NOV 28	MELBOURNE-FL	1902 EST NOV 28
ATLANTIC CITY-NJ	1739 EST NOV 28	MYRTLE BCH-SC	1924 EST NOV 28
SCATARIE IS-NS	1858 AST NOV 28	CHARLESTON-SC	1927 EST NOV 28
VIRGINIA BCH-VA	1808 EST NOV 28	JACKSONVILLE B-FL	1947 EST NOV 28
ST LAWRENCE-NF	1939 NST NOV 28	BONAVISTA-NF	2135 NST NOV 28
MANHATTAN-NY	1812 EST NOV 28	SAVANNAH-GA	2106 EST NOV 28

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GMZ130-150-155-235-230-250-255-330-335-350-355-455-450-555-550-
630-655-650-750-755-830-856-853-850-657-656-ANZ081-AMZ710-720-
730-740-750-TXZ251-256-257-242>247-236>238-213-214-215-216-
LAZ051>054-066>070-040-062-064-MSZ080>082-ALZ061>064-FLZ002-004-
006-008-012-014-015-027-018-028-034-039-042-048>051-055-060-062-
065-069-070-075-VIZ001-002-PRZ001>003-005-007-008-010-011-281926-
COASTAL AREAS IN PUERTO RICO AND THE U.S. VIRGIN ISLANDS AND FROM
BROWNSVILLE TEXAS TO FLAMINGO FLORIDA AND FROM BOAT HARBOUR
NEWFOUNDLAND TO CAPE CHIDLEY LABRADOR.

...TSUNAMI ADVISORY STATEMENT...

NO - REPEAT NO - WATCH OR WARNING IS IN EFFECT FOR THE
COASTAL AREAS IN PUERTO RICO AND THE U.S. VIRGIN ISLANDS
AND FROM BROWNSVILLE TEXAS TO FLAMINGO FLORIDA AND
FROM BOAT HARBOUR NEWFOUNDLAND TO CAPE CHIDLEY LABRADOR.

FOR INFORMATION ONLY - ESTIMATED TIMES OF INITIAL WAVE ARRIVAL

MAYAGUEZ-PR	1720 AST NOV 28	BATTLE HARBOUR-NL	2223 NST NOV 28
SAN JUAN-PR	1721 AST NOV 28	PANAMA CITY-FL	2122 CST NOV 28
CHRISTIANSTED-VI	1736 AST NOV 28	CORPUS CHRISTI-TX	2211 CST NOV 28
CHARLOTTE AMALIE-VI	1755 AST NOV 28	BILOXI-MS	2245 CST NOV 28
KEY WEST-FL	1930 EST NOV 28	GALVESTON-TX	2327 CST NOV 28
		ST PETERSBURG-FL	2337 EST NOV 28

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TSUNAMI WARNINGS ARE ISSUED DUE TO THE IMMINENT THREAT OF A TSUNAMI.
WARNINGS CAN BE BASED SOLELY ON SEISMIC INFORMATION... OR BASED
ON CONFIRMATION THAT A POTENTIALLY DESTRUCTIVE WAVE HAS OCCURRED.
COASTAL RESIDENTS IN THE WARNING AREA WHO ARE NEAR THE BEACH OR
IN LOW-LYING REGIONS SHOULD MOVE IMMEDIATELY INLAND TO HIGHER
GROUND.

TSUNAMI WATCHES ARE ISSUED AS AN ADVANCE ALERT TO AREAS THAT

COULD BE IMPACTED BY A TSUNAMI. THE WATCH WILL BE EITHER
CANCELLED OR UPGRADED TO A WARNING. POPULATIONS IN A WATCH AREA
SHOULD CLOSELY FOLLOW THE PROGRESS OF THIS EVENT.

MESSAGES WILL BE ISSUED EVERY HALF HOUR OR SOONER IF CONDITIONS
WARRANT. THIS TSUNAMI WARNING AND WATCH WILL REMAIN IN EFFECT
UNTIL FURTHER NOTICE. REFER TO THE INTERNET SITE
WCATWC.ARH.NOAA.GOV FOR MORE INFORMATION AND EXPECTED ARRIVAL
TIMES.

THIS IS A TEST MESSAGE. DO NOT TAKE ACTION BASED ON THIS TEST
MESSAGE.
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7.6 Atlantic AOR Tsunami Information Statement (WEXX22)

WEXX22 PAAQ 281828
TIBAT1

TSUNAMI INFORMATION STATEMENT NUMBER 1
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
128 PM EST TUE NOV 28 2006

...THIS MESSAGE IS FOR TEST PURPOSES TO SHOW AN EXAMPLE
WEXX22 MESSAGE...

...THIS TSUNAMI INFORMATION STATEMENT IS FOR PUERTO RICO/
THE U.S. VIRGIN ISLANDS/ THE U.S. ATLANTIC
AND GULF OF MEXICO COASTS AND EASTERN CANADA...

NO - REPEAT NO - WATCH OR WARNING IS IN EFFECT FOR THESE AREAS.

EVALUATION

BASED ON EARTHQUAKE DATA AND HISTORIC TSUNAMI RECORDS THE
EARTHQUAKE WAS NOT SUFFICIENT TO GENERATE A TSUNAMI DAMAGING TO
PUERTO RICO/ THE U.S. VIRGIN ISLANDS/ THE U.S. ATLANTIC AND
GULF OF MEXICO COASTS/ AND EASTERN CANADIAN.

PRELIMINARY EARTHQUAKE PARAMETERS

MAGNITUDE - 6.2
TIME - 1320 EST NOV 28 2006
1220 CST NOV 28 2006
1820 UTC NOV 28 2006
LOCATION - 18.9 NORTH 67.4 WEST
50 MILES NW OF MAYAGUEZ PUERTO RICO
90 MILES NW OF SAN JUAN PUERTO RICO
DEPTH - 9 MILES

THIS WILL BE THE ONLY STATEMENT ISSUED FOR THIS EVENT BY THE
WEST COAST/ALASKA TSUNAMI WARNING CENTER UNLESS ADDITIONAL
INFORMATION BECOMES AVAILABLE. REFER TO THE INTERNET SITE
WCATWC.ARH.NOAA.GOV FOR MORE INFORMATION.

THIS IS A TEST MESSAGE. DO NOT TAKE ACTION BASED ON THIS TEST
MESSAGE.
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7.7 Atlantic Information Statement (SEXX60)

SEXX60 PAAQ 281840
EQIAT1

TSUNAMI SEISMIC INFORMATION STATEMENT
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
140 PM EST TUE NOV 28 2006

...THIS MESSAGE IS FOR TEST PURPOSES TO SHOW AN EXAMPLE
SEXX60 MESSAGE...

...THIS IS AN INFORMATION STATEMENT...

EVALUATION

AN EARTHQUAKE HAS OCCURRED WITH A MAGNITUDE SUCH THAT A TSUNAMI
IS NOT EXPECTED. IN COASTAL AREAS OF INTENSE SHAKING LOCALLY
GENERATED TSUNAMIS CAN BE TRIGGERED BY UNDERWATER LANDSLIDES.
THIS WILL BE THE ONLY WCATWC MESSAGE ISSUED FOR THIS EVENT.

PRELIMINARY EARTHQUAKE PARAMETERS

MAGNITUDE - 5.7
TIME - 1330 EST NOV 28 2006
1230 CST NOV 28 2006
1830 UTC NOV 28 2006
LOCATION - 32.2 NORTH 79.3 WEST
105 MILES SW OF MYRTLE BEACH SOUTH CAROLINA
55 MILES SE OF CHARLESTON SOUTH CAROLINA
DEPTH - 19 MILES

THE LOCATION AND MAGNITUDE ARE BASED ON PRELIMINARY INFORMATION.
FURTHER INFORMATION WILL BE ISSUED BY THE UNITED STATES
GEOLOGICAL SURVEY - EARTHQUAKE.USGS.GOV.

THIS IS A TEST MESSAGE. DO NOT TAKE ACTION BASED ON THIS TEST
MESSAGE.
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7.8 Pacific AOR Public Tsunami Warning/Watch/Advisory (WEAK51)

WEAK51 PAAQ 230938
TSUAK1

BULLETIN

PUBLIC TSUNAMI MESSAGE NUMBER 1
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
238 AM PDT MON OCT 23 2006

...THIS MESSAGE IS FOR TEST PURPOSES TO SHOW AN EXAMPLE
WEAK51 MESSAGE...

...A TEST TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE OREGON
- WASHINGTON AND BRITISH COLUMBIA COASTAL AREAS FROM
CLATSOP SPIT OREGON TO LANGARA I. BRITISH COLUMBIA...

A TSUNAMI WARNING MEANS... ALL COASTAL RESIDENTS IN THE WARNING
AREA WHO ARE NEAR THE BEACH OR IN LOW-LYING REGIONS SHOULD MOVE
IMMEDIATELY INLAND TO HIGHER GROUND AND AWAY FROM ALL HARBORS AND
INLETS INCLUDING THOSE SHELTERED DIRECTLY FROM THE SEA. THOSE
FEELING THE EARTH SHAKE... SEEING UNUSUAL WAVE ACTION... OR THE
WATER LEVEL RISING OR RECEDING MAY HAVE ONLY A FEW MINUTES BEFORE
THE TSUNAMI ARRIVAL AND SHOULD EVACUATE IMMEDIATELY. HOMES AND
SMALL BUILDINGS ARE NOT DESIGNED TO WITHSTAND TSUNAMI IMPACTS.
DO NOT STAY IN THESE STRUCTURES.

ALL RESIDENTS WITHIN THE WARNED AREA SHOULD BE ALERT FOR
INSTRUCTIONS BROADCAST FROM THEIR LOCAL CIVIL AUTHORITIES. THIS
TSUNAMI WARNING IS BASED SOLELY ON EARTHQUAKE INFORMATION - THE
TSUNAMI HAS NOT YET BEEN CONFIRMED.

AT 230 AM PACIFIC DAYLIGHT TIME ON OCTOBER 23 AN EARTHQUAKE WITH
PRELIMINARY MAGNITUDE 7.3 OCCURRED 40 MILES SOUTHEAST OF
PORT ALICE BRITISH COLUMBIA.
THIS EARTHQUAKE MAY HAVE GENERATED A TSUNAMI. IF A TSUNAMI
HAS BEEN GENERATED THE WAVES WILL FIRST REACH
TOFINO BRITISH COLUMBIA AT 327 AM PDT ON OCTOBER 23.
ESTIMATED TSUNAMI ARRIVAL TIMES AND MAPS ALONG WITH SAFETY RULES
AND OTHER INFORMATION CAN BE FOUND ON THE WEB SITE
WCATWC.ARH.NOAA.GOV.

TSUNAMIS CAN BE DANGEROUS WAVES THAT ARE NOT SURVIVABLE. WAVE
HEIGHTS ARE AMPLIFIED BY IRREGULAR SHORELINE AND ARE DIFFICULT TO
PREDICT. TSUNAMIS OFTEN APPEAR AS A STRONG SURGE AND MAY BE
PRECEDED BY A RECEDING WATER LEVEL. MARINERS IN WATER DEEPER
THAN 600 FEET SHOULD NOT BE AFFECTED BY A TSUNAMI. WAVE HEIGHTS
WILL INCREASE RAPIDLY AS WATER SHALLOWS. TSUNAMIS ARE A SERIES OF
OCEAN WAVES WHICH CAN BE DANGEROUS FOR SEVERAL HOURS AFTER THE
INITIAL WAVE ARRIVAL. DO NOT RETURN TO EVACUATED AREAS UNTIL AN
ALL CLEAR IS GIVEN BY LOCAL CIVIL AUTHORITIES.

THE PACIFIC TSUNAMI WARNING CENTER WILL ISSUE MESSAGES
FOR HAWAII AND OTHER AREAS OF THE PACIFIC OUTSIDE CALIFORNIA/
OREGON/ WASHINGTON/ BRITISH COLUMBIA AND ALASKA.

ADDITIONAL MESSAGES WILL BE ISSUED EVERY HALF HOUR OR SOONER IF
CONDITIONS WARRANT. THIS TSUNAMI WARNING WILL REMAIN
IN EFFECT UNTIL FURTHER NOTICE. FOR FURTHER INFORMATION STAY TUNED
TO NOAA WEATHER RADIO... YOUR LOCAL TV OR RADIO STATIONS... OR SEE
THE WEB SITE WCATWC.ARH.NOAA.GOV.

THIS IS A TEST MESSAGE. DO NOT TAKE ACTION BASED ON THIS TEST
MESSAGE.

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7.9 Pacific AOR Public Tsunami Information Statement (WEAK53)

WEAK53 PAAQ 230944
TIBAK1

PUBLIC TSUNAMI INFORMATION STATEMENT NUMBER 1
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
244 AM PDT MON OCT 23 2006

...THIS MESSAGE IS FOR TEST PURPOSES TO SHOW AN EXAMPLE
WEAK53 MESSAGE...

...A STRONG EARTHQUAKE HAS OCCURRED BUT A TSUNAMI IS NOT
EXPECTED ALONG THE CALIFORNIA/ OREGON/ WASHINGTON/
BRITISH COLUMBIA OR ALASKA COASTS...

NO - REPEAT NO - TSUNAMI WARNING OR WATCH IS IN EFFECT FOR
THESE AREAS.

BASED ON THE EARTHQUAKE MAGNITUDE AND HISTORIC TSUNAMI
INFORMATION A DAMAGING TSUNAMI IS NOT EXPECTED ALONG
THE CALIFORNIA/ OREGON/ WASHINGTON/ BRITISH COLUMBIA AND ALASKA
COASTS. AT COASTAL LOCATIONS WHICH HAVE EXPERIENCED
STRONG GROUND SHAKING LOCAL TSUNAMIS ARE POSSIBLE DUE
TO UNDERWATER LANDSLIDES.

AT 240 AM PACIFIC DAYLIGHT TIME ON OCTOBER 23 AN EARTHQUAKE WITH
PRELIMINARY MAGNITUDE 6.8 OCCURRED
OFF THE COAST OF GUERRERO MEXICO.

THE PACIFIC TSUNAMI WARNING CENTER WILL ISSUE MESSAGES
FOR HAWAII AND OTHER AREAS OF THE PACIFIC OUTSIDE CALIFORNIA/
OREGON/ WASHINGTON/ BRITISH COLUMBIA AND ALASKA.

THIS WILL BE THE ONLY STATEMENT ISSUED FOR THIS EVENT BY THE
WEST COAST/ALASKA TSUNAMI WARNING CENTER UNLESS ADDITIONAL
INFORMATION BECOMES AVAILABLE. SEE THE WEB SITE WCATWC.ARH.NOAA.GOV
FOR BASIC TSUNAMI INFORMATION - SAFETY RULES AND TSUNAMI TRAVEL
TIMES.

THIS IS A TEST MESSAGE. DO NOT TAKE ACTION BASED ON THIS TEST
MESSAGE.
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7.10 Atlantic AOR Public Tsunami Warning/Watch/Advisory (WEXX30)

WEXX30 PAAQ 281831
TSUATE

BULLETIN
PUBLIC TSUNAMI MESSAGE NUMBER 1
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
131 PM EST TUE NOV 28 2006

...THIS MESSAGE IS FOR TEST PURPOSES TO SHOW AN EXAMPLE
WEXX30 MESSAGE...

...A TEST TSUNAMI WARNING IS IN EFFECT WHICH INCLUDES THE RHODE
ISLAND - MASSACHUSETTS - NEW HAMPSHIRE - MAINE - NEW
BRUNSWICK AND NOVA SCOTIA COASTAL AREAS FROM WATCH HILL
RHODE ISLAND TO CHEZZETCOOK NOVA SCOTIA...

...A TEST TSUNAMI WATCH IS IN EFFECT FOR THE FLORIDA - GEORGIA -
SOUTH CAROLINA - NORTH CAROLINA - VIRGINIA - MARYLAND -
DELAWARE - NEW JERSEY - NEW YORK - CONNECTICUT AND RHODE
ISLAND COASTAL AREAS FROM FLAMINGO FLORIDA TO WATCH HILL
RHODE ISLAND AND FOR THE NOVA SCOTIA AND NEWFOUNDLAND
COASTAL AREAS FROM CHEZZETCOOK NOVA SCOTIA TO BOAT HARBOUR
NEWFOUNDLAND...

A TSUNAMI WARNING MEANS... ALL COASTAL RESIDENTS IN THE WARNING
AREA WHO ARE NEAR THE BEACH OR IN LOW-LYING REGIONS SHOULD MOVE
IMMEDIATELY INLAND TO HIGHER GROUND AND AWAY FROM ALL HARBORS AND
INLETS INCLUDING THOSE SHELTERED DIRECTLY FROM THE SEA. THOSE
FEELING THE EARTH SHAKE... SEEING UNUSUAL WAVE ACTION... OR THE
WATER LEVEL RISING OR RECEDING MAY HAVE ONLY A FEW MINUTES BEFORE
THE TSUNAMI ARRIVAL AND SHOULD EVACUATE IMMEDIATELY. HOMES AND
SMALL BUILDINGS ARE NOT DESIGNED TO WITHSTAND TSUNAMI IMPACTS.
DO NOT STAY IN THESE STRUCTURES.

ALL RESIDENTS WITHIN THE WARNED AREA SHOULD BE ALERT FOR
INSTRUCTIONS BROADCAST FROM THEIR LOCAL CIVIL AUTHORITIES. THIS
TSUNAMI WARNING IS BASED SOLELY ON EARTHQUAKE INFORMATION - THE
TSUNAMI HAS NOT YET BEEN CONFIRMED.

A TSUNAMI WATCH MEANS... ALL COASTAL RESIDENTS IN THE WATCH AREA
SHOULD PREPARE FOR POSSIBLE EVACUATION. A TSUNAMI WATCH IS ISSUED
TO AREAS WHICH WILL NOT BE IMPACTED BY THE TSUNAMI FOR AT LEAST
THREE HOURS. WATCH AREAS WILL EITHER BE UPGRADED TO WARNING STATUS
OR CANCELED.

AT 120 PM EASTERN STANDARD TIME ON NOVEMBER 28 AN EARTHQUAKE WITH
PRELIMINARY MAGNITUDE 7.9 OCCURRED 60 MILES NORTHEAST OF
NANTUCKET MASSACHUSETTS.
THIS EARTHQUAKE MAY HAVE GENERATED A TSUNAMI. IF A TSUNAMI
HAS BEEN GENERATED THE WAVES WILL FIRST REACH
MERRIMACK RIVER MASSACHUSETTS AT 241 PM EST ON NOVEMBER 28.
ESTIMATED TSUNAMI ARRIVAL TIMES AND MAPS ALONG WITH SAFETY RULES
AND OTHER INFORMATION CAN BE FOUND ON THE WEB SITE
WCATWC.ARH.NOAA.GOV.

TSUNAMIS CAN BE DANGEROUS WAVES THAT ARE NOT SURVIVABLE. WAVE
HEIGHTS ARE AMPLIFIED BY IRREGULAR SHORELINE AND ARE DIFFICULT TO
PREDICT. TSUNAMIS OFTEN APPEAR AS A STRONG SURGE AND MAY BE
PRECEDED BY A RECEDING WATER LEVEL. MARINERS IN WATER DEEPER
THAN 600 FEET SHOULD NOT BE AFFECTED BY A TSUNAMI. WAVE HEIGHTS
WILL INCREASE RAPIDLY AS WATER SHALLOWS. TSUNAMIS ARE A SERIES OF
OCEAN WAVES WHICH CAN BE DANGEROUS FOR SEVERAL HOURS AFTER THE

INITIAL WAVE ARRIVAL. DO NOT RETURN TO EVACUATED AREAS UNTIL AN ALL CLEAR IS GIVEN BY LOCAL CIVIL AUTHORITIES.

ADDITIONAL MESSAGES WILL BE ISSUED EVERY HALF HOUR OR SOONER IF CONDITIONS WARRANT. THIS TSUNAMI WARNING AND WATCH WILL REMAIN IN EFFECT UNTIL FURTHER NOTICE. FOR FURTHER INFORMATION STAY TUNED TO NOAA WEATHER RADIO... YOUR LOCAL TV OR RADIO STATIONS... OR SEE THE WEB SITE WCATWC.ARH.NOAA.GOV.

THIS IS A TEST MESSAGE. DO NOT TAKE ACTION BASED ON THIS TEST MESSAGE.
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7.11 Atlantic AOR Public Tsunami Information Statement (WEXX32)

WEXX32 PAAQ 281832
TIBATE

PUBLIC TSUNAMI INFORMATION STATEMENT NUMBER 1
NWS WEST COAST/ALASKA TSUNAMI WARNING CENTER PALMER AK
132 PM EST TUE NOV 28 2006

...THIS MESSAGE IS FOR TEST PURPOSES TO SHOW AN EXAMPLE
WEXX32 MESSAGE...

...A STRONG EARTHQUAKE HAS OCCURRED BUT A TSUNAMI IS NOT
EXPECTED ALONG THE PUERTO RICO/ U.S. VIRGIN ISLANDS/ U.S.
ATLANTIC AND GULF OF MEXICO/ AND EASTERN CANADIAN COASTS...

NO - REPEAT NO - WARNING OR WATCH IS IN EFFECT FOR
THESE AREAS.

BASED ON THE EARTHQUAKE LOCATION... MAGNITUDE AND HISTORIC
TSUNAMI RECORDS A DAMAGING TSUNAMI IS NOT EXPECTED ALONG
THE PUERTO RICO/ U.S. VIRGIN ISLANDS/ U.S.ATLANTIC AND GULF
OF MEXICO/ AND EASTERN CANADIAN COASTS.

AT 120 PM EASTERN STANDARD TIME ON NOVEMBER 28 AN EARTHQUAKE WITH
PRELIMINARY MAGNITUDE 6.2 OCCURRED 50 MILES NORTHWEST OF
MAYAGUEZ PUERTO RICO.

THIS WILL BE THE ONLY STATEMENT ISSUED FOR THIS EVENT BY THE
WEST COAST/ALASKA TSUNAMI WARNING CENTER UNLESS ADDITIONAL
INFORMATION BECOMES AVAILABLE. SEE THE WEB SITE WCATWC.ARH.NOAA.GOV
FOR BASIC TSUNAMI INFORMATION - SAFETY RULES AND TSUNAMI TRAVEL
TIMES.

THIS IS A TEST MESSAGE. DO NOT TAKE ACTION BASED ON THIS TEST
MESSAGE.
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